

What is claimed is:

- 1 1. A telephony private branch exchange routing arrangement adapted to route IP
2 telephony data, the routing arrangement comprising:
3 a call-control application having an OOP telephony interface and programmed,
4 using OOP and the OOP telephony interface, to control the routing of calls;
5 a device-control application adapted to provide telephony communication
6 signals for the routed calls and to interface between the call-control application and a
7 plurality of telephony devices; and
8 a configuration manager adapted to provide configuration information for the
9 call-control application and the device-control application.
- 1 2. The routing arrangement of claim 1, wherein the configuration manager is
2 further adapted to provide configuration information for a telephony device
3 communicatively coupled to the routing arrangement.
- 1 3. The routing arrangement of claim 1, wherein the OOP interface of the call-
2 control application includes a Java telephony application programming interface
3 (JTAPI).
- 1 4. The routing arrangement of claim 3, wherein the JTAPI is adapted to interface
2 with both local and remote applications.

1 5. The routing arrangement of claim 1, wherein the call-control application further
2 includes a phonelet adapted to interface between the routing arrangement and a
3 telephone user for controlling call routing to the user.

1 6. The routing arrangement of claim 5, wherein the phonelet is programmed with a
2 selected access level to the routing arrangement.

1 7. The routing arrangement of claim 1, wherein the call-control application is
2 adapted to couple to and route calls via an Internet protocol gateway.

1 8. The routing arrangement of claim 1, wherein the call-control application further
2 comprises a phone configuration application adapted to communicate telephony device
3 configuration selections between a user and the routing arrangement.

1 9. The routing arrangement of claim 8, wherein the phone configuration
2 application is further adapted to monitor active calls.

1 10. The routing arrangement of claim 8, wherein the phone configuration
2 application is adapted to communicate telephony device configuration via an Internet
3 browser.

1 11. The routing arrangement of claim 1, wherein the call-control application
2 includes an administration call monitor application adapted to provide real-time call
3 monitoring to an administrator via a user interface.

1 12. The routing arrangement of claim 1, wherein the device control application is
2 adapted to use JTAPI to communicate with the call control application.

1 13. The routing arrangement of claim 1, wherein the device control application
2 includes a media development kit adapted to convert between logical data that the call-
3 control application uses and telephony data that the plurality of telephony devices use.

1 14. The routing arrangement of claim 13, wherein the device control application
2 includes at least one protocol handler communicatively coupled to the media
3 development kit via a media device application protocol interface (MDAPI) and is
4 adapted to provide an interface between the media development kit and external
5 hardware equipment controlled by the routing arrangement.

1 15. The routing arrangement of claim 14, wherein the external hardware equipment
2 includes at least one of: an IP analog telephone interface, and IP digital telephone
3 interface, a SIP gateway and an H323 gateway.

1 16. The routing arrangement of claim 1, wherein the device-control application is
2 adapted to provide telephony communication signals including at least one of: DTMF

3 tone, dial tone, off hook, ring, ring-back, ring-back stop, connect, hang-up, delete
4 connection, call-waiting, alert and digit signals.

1 17. The routing arrangement of claim 1, wherein the configuration manager is
2 further adapted to edit the configuration information in response to a user request.

1 18. The routing arrangement of claim 17, wherein the configuration manager is
2 programmed to permit user editing based upon an access code provided by the user,
3 wherein the level of editing permitted is based upon the security level associated with
4 the user access code.

1 19. The routing arrangement of claim 1, wherein the configuration manager is
2 adapted to store configuration data.

1 20. The routing arrangement of claim 19, wherein the stored configuration data is
2 stored in the form of enterprise java beans (EJB).

1 21. The routing arrangement of claim 1, wherein the configuration manager includes
2 an extensible markup language (XML) arrangement adapted to transfer structured
3 information data to a user, the call-control application and the device-control
4 application, the data including content and an indicator of the role the content plays.

1 22. The routing arrangement of claim 1, wherein the configuration manager further
2 includes a servlet adapted to interface with an Internet browser for editing the
3 configuration information.

1 23. A programmable communications network for communicatively coupling
2 telephony stations, the network comprising:
3 a plurality of communications stations communicatively coupled to each other,
4 at least one of the plurality of communications stations being adapted to communicate
5 call-method configuration data; and
6 a computer server arrangement coupled to the communications stations and
7 comprising:
8 core configuration data;
9 a call-control application programmed, using an OOP interface, with the
10 call-method configuration data in combination with the core configuration data;
11 and
12 an IP telephony switch communicatively coupled to the communications
13 stations and responsive to the programmed call-control application, for
14 coordinating communication between selected ones of the communications
15 stations.

1 24. The network of claim 23, wherein at least one of the plurality of
2 communications stations includes a user interface.

1 25. The network of claim 23, wherein the plurality of communications stations
2 includes at least one of: an analog telephone coupled to an analog-to-IP converter; a
3 wireless station, an Internet interface station, a computer, and IP phone and a
4 videoconferencing device.

1 26. The network of claim 23, wherein the call control application is configured
2 using a combination of internal OOP program instructions and OOP program
3 instructions received from an external source.

1 27. The network of claim 23, wherein OOP program instructions are provided by a
2 user at one of the plurality of communications stations.

1 28. The network of claim 23, wherein the telephony data includes at least one of:
2 voice data, image data and communications control data.

1 29. The network of claim 23, further comprising:
2 a telephony service providing arrangement adapted to use the computer server
3 arrangement to receive data including telephony data and to rout the data as IP
4 telephony data; and
5 a communications line coupled to the service provider and adapted to
6 communicate the IP telephony data.

1 30. The network of claim 23, wherein the computer server arrangement is adapted to
2 monitor the locations of the communications stations and, based on the locations, to
3 assign a telephony communications rate for charging a user at one of the plurality of
4 communications stations for the communicative coupling.

1 31. The network of claim 30, wherein the computer server arrangement is further
2 adapted to generate data representing the monitored locations and a communication
3 between stations and, based on the generated data, assign a fee for the communication.

1 32. The network of claim 23, wherein the communications stations are
2 communicatively coupled via at least one of: a PSTN, the Internet, a LAN, a wireless
3 link, coaxial cable, a T1 link, a T3 link and a DSL link.

1 33. A telephony private branch exchange routing arrangement adapted to route IP
2 telephony data, the routing arrangement comprising:
3 means for controlling telephony calls and including an OOP telephony interface
4 and programmed, using OOP and the OOP telephony interface, to control the routing of
5 calls;

6 means for device control adapted to provide telephony communication signals
7 for the routed calls and to interface between the means for controlling telephony calls
8 and a plurality of telephony devices; and

9 means for configuration managing adapted to provide configuration information
10 for the call-control application and the device-control application.

1 34. A method for providing telephony communications, the method comprising:
2 providing a configurable IP telephony router communicatively coupled to a
3 communications network and adapted to communicate telephony data;
4 providing configuration information to the telephony router and controlling the
5 router therefrom;
6 sending telephony data to the router via the communications network and
7 receiving the telephony data at the router; and
8 using the provided configuration information to route telephony data via the
9 router.

1 35. The method of claim 34, wherein providing a configurable IP telephony router
2 includes providing:
3 a call-control application having an OOP telephony interface and programmed,
4 using OOP and the OOP telephony interface, to control the routing of telephone calls;
5 a device-control application adapted to provide telephony communication
6 signals for the routed calls and to interface between the call-control application and a
7 plurality of telephony devices; and
8 a configuration manager adapted to provide configuration information for the
9 call-control application and the device-control application.

1 36. The method of claim 34, wherein providing a configurable IP telephony router
2 includes providing a router adapted to be used at a telephone service provider for
3 controlling telephone calls to a plurality of subscribers.

1 37. The method of claim 34, wherein providing configuration information includes
2 assigning a telephone number to a selected IP telephony address.

1 38. The method of claim 34, wherein providing configuration information includes
2 providing call control configuration information for controlling at least one of: call
3 forwarding, voicemail, call conferencing, video, display options, call waiting, caller ID
4 and call blocking.

1 39. The method of claim 34, further comprising prompting a user for an input, and
2 wherein providing configuration information includes providing information in
3 response to the prompt.

1 40. The method of claim 34, wherein sending telephony data includes sending
2 telephone call control data for controlling the routing of a least one telephone call.

1 41. The method of claim 34, wherein sending telephony data includes sending
2 communications including at least one of: voice data, image data and video data.

1 42. The method of claim 34, wherein using the provided configuration information
2 to route telephony data includes at least one of: routing telephony data within a user
3 premise, routing telephony data to a plurality of premises, routing telephony data via the
4 Internet, and routing telephony data via a PSTN.

1 43. The method of claim 34, further comprising:
2 determining a relationship between a call source and a call destination;
3 correlating the determined relationship to a selected one of a group of pre-
4 determined relationships, each predetermined relationship having a pre-selected
5 telephony rate application; and
6 applying the telephony rate to the communication.

1 44. The method of claim 43, wherein the rate is based on a relationship including at
2 least one of: the time that the call takes place, the location of sender/receiver, the
3 amount of information sent, the duration of the call, a selected security level and a
4 selected encryption level.